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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,032

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EXAMINER

JOHNSON, CONNIE P

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,032	Applicant(s) NISHIMURA ET AL.	
	Examiner CONNIE P. JOHNSON	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/21/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

2. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Claim 2, formulas 2-7

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

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3. The claims are deemed to correspond to the species listed above in the following manner:

Claim 2, formulas 2-7.

The following claim(s) are generic: claim 1, formula 1.

4. The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: Maeda teaches a polymer with a recurring unit with an alicyclic lactone group as claimed.

5. During a telephone conversation with Chris Raymond on 8/27/2007 a provisional election was made without traverse to prosecute the invention of formula 2 of claim 2. Affirmation of this election must be made by applicant in replying to this Office action. Claim 2, formulas 3-7 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Status

6. Claims 1-12 are pending.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 3 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Maeda et al., U.S. Patent Publication No. 2001/0026901 A1.

Maeda teaches a photoresist composition comprising a polymer and a photoacid generator. The polymer comprises a recurring group as in formula (2) of Maeda on page 2. The recurring group comprises an alicyclic group with a lactone structure. The polymer also comprises a recurring group with an acid-labile group attached. Maeda shows the acid-labile group as R₄ in formula (2). In examples 18, 24 and 25 Maeda teaches the polymer has a ratio of weight average molecular weight to a number average molecular weight of 1.45, 1.4 and 1.5, respectively. The polymer that is used in the photoresist composition is obtained by polymerization with a radical polymerization initiator (page 7, [0040]).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-5 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa et al., U.S. Patent No. 6,416,928 B1 in view of Nozaki et al., EP 1184723 A2.

Ohsawa teaches a chemically amplified resist composition comprising a polymer resin with an acid-labile group and a photoacid generator. The polymer becomes alkali soluble by the action of an acid. In column 16, formula (2a') shows a recurring unit wherein group OR^{6a} is an acid-labile group. Substituent OR^{6a} may comprise an alicyclic

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group as in substituent formula (7) in column 17. When formula (7) is used, two of the R^2 groups in formula (1) of claim 1 form an alicyclic group. The polydispersity of the recurring units with an acid-labile group is preferably less than 1.5 (col. 15, lines 48-49). Ohsawa also teaches that the acid-labile recurring unit is present in an amount of up to 50mol% (col. 16, line 3-16). The limitation of claim 5 wherein the acid-labile group containing resin is produced by random polymerization is a process limitation and has no patentable weight. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (MPEP 2113). The photoacid generators comprise a (4-tert-butylphenyl)diphenylsulfonium salt (col. 10, 57-58). Ohsawa also teaches a basic component to suppress the rate of diffusion when the acid generated by the photoacid generator diffuses within the resist film (col. 42, lines 30-35). Ohsawa does not teach that the recurring units in the polymer comprise formula (2) of claim 2.

Nozaki teaches a resist composition comprising a photoacid generator and a film forming polymer with an alkali-soluble group (page 7, [0031-0032]). The polymer preferably has a norbornyl alicyclic group in the recurring unit (page 7, [0033]). The norbornyl alicyclic group controls alkali-solubility in the resist composition (page 8, [0035-0036]). Example 23 of Nozaki teaches formula (2) of claim 2 as a recurring unit of

the polymer. Nozaki also teaches that the norbornyl alicyclic group is present in an amount of 5 to 95mol% (page 8, [0037]). It would have been obvious to one of ordinary skill in the art to use the norbornyl alicyclic group of example 23 in Nozaki in the composition of Ohsawa to maintain alkali-solubility in the resist composition as required by Ohsawa (Ohsawa, col. 4, lines 8-17).

11. Claims 1, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al., U.S. Patent Publication No. 2001/0026901 A1 in view of Clark, U.S. Patent No. 4,753,981.

Maeda teaches a photoresist composition comprising a polymer and a photoacid generator. The polymer comprises a recurring group as in formula (2) of Maeda on page 2. The recurring group comprises an alicyclic group with a lactone structure. The alicyclic lactone group is an acid-labile group. Maeda also shows the acid-labile group as R₄ in formula (2). In examples 18, 24 and 25 Maeda teaches the polymer has a polydispersity of 1.45, 1.4 and 1.5, respectively. The polymer that is used in the photoresist composition is obtained by polymerization with a radical polymerization initiator (page 7, [0040]). Maeda does not teach that the polymerization initiator is a combination of a transition metal complex, an organic halide and a Lewis acid or amine.

However, Clark teaches a polymerization process for preparing water-in-oil latexes of water-soluble polymers of ethylenically unsaturated monomers. The polymerization process comprises a polymerization initiator having p-methane hydroperoxide activated by ferrous sulfate heptahydrate complexed with the

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tetrasodium salt of ethylenediamine tetraacetic acid and reduced by sodium formaldehyde sulfoxylate (col. 4, lines 8-15). Although Clark teaches the polymerization initiator for an emulsion composition, Clark teaches using a combination of a transition metal complex, organic halide and a Lewis acid or amine to polymerize monomers to form polymers. Therefore, it would have been obvious to one of ordinary skill in the art to use the polymerization initiator of Clark in the Maeda composition because Clark teaches using polymerization initiators to generate free-radical fragments which can initiate polymerization of ethylenically unsaturated monomers (col. 3, lines 57-67).

12. Claims 1, 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al., U.S. Patent Publication No. 2001/0026901 A1 in view of Babu et al., WO 95/10552.

Maeda teaches a photoresist composition comprising a polymer and a photoacid generator. The polymer comprises a recurring group as in formula (2) of Maeda on page 2. The recurring group comprises an alicyclic group with a lactone structure. The alicyclic lactone group is an acid-labile group. The polymer that is used in the photoresist composition is obtained by polymerization with a radical polymerization initiator (page 7, [0040]). Maeda does not teach a polymerization initiator with a structure as in claim 7.

However, Babu teaches a photosensitive composition comprising a monomer compound, polymerization initiator and a photosensitive compound (page 2). Babu teaches that the polymerization initiator induces polymerization of the monomers to

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linear thermoplastic polymers (page 2, lines 1-5). The polymerization initiators include S-benzoyl-N,N-dimethyldithiocarbamate. The S-benzoyl-N,N-dimethyldithiocarbamate meets the limitations of formula (8) of claim 7. It would have been obvious to one of ordinary skill in the art to use the S-benzoyl-N,N-dimethyldithiocarbamate in the composition of Maeda because Maeda teaches any photoinitiator that is capable of generating light at wavelengths of 400nm or less is suitable for the resist composition (page 7, [0043]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cynthia H Kelly/
Supervisory Patent Examiner, Art Unit 1795

Connie P. Johnson
Examiner
Art Unit 1795